

REMARKS

The Office action of February 12, 2003, has been carefully considered.

Claims 1 through 5 and 15 have been rejected under 35 USC 103(a) over Miyasato et al.

Claims 1 through 15 have now been cancelled from the application, and replaced by a new set of Claims 16 through 24. Claim 16 recites that the product is produced by casting an aluminum alloy into a cast ingot having an as-cast grain size between 300 and 800  $\mu\text{m}$ , which is subsequently heat treated by the steps previously recited in Claim 1. A discussion of the as-cast grain size is found in the present specification at page 7, lines 6 through 11.

Claim 17 represents newly claimed subject matter, relating to the addition of nucleant particles to the cast ingots, as discussed in the specification at page 6, lines 11 through 21. Claims 18 and 19 replace originally filed Claims 6 and 7, directed to the nucleant particles being titanium and boron, as also discussed on page 6 of the specification.

Claims 20 through 24 replace originally filed Claims 2 through 5 and 15, respectively.

Miyasato et al has been cited to show a partially recrystallized aluminum alloy having a composition which

overlaps that of the claimed invention, and processed to T6 temper which includes process steps recited in the present claims.

New Claim 16, as noted above, recites that the cast ingot has a grain size between 300 and 800  $\mu\text{m}$ . Typically, raw products are obtained from ingots with a typical as-cast grain size of < 250  $\mu\text{m}$ . The advantages of the larger as-cast grain size are set forth in the specification at page 7, line 25 through page 8, line 16. The raw products of the invention thus have a less recrystallized structure with the recrystallized areas forming a network of a dimension related by a geographical transformation to the size of the original as-cast grains.

As there is no disclosure or suggestion in the Miyasato et al reference that the as-cast grain size has any influence on the final product, and no disclosure or suggestion that the as-cast grain size should be maintained between 300 and 800  $\mu\text{m}$ , withdrawal of this rejection is requested.

Claims 1 through 5, 7 and 15 have been rejected under 35 USC 103 over Shahani et al.

The arguments made above with regard to Miyasato et al apply equally to the Shahani et al reference. Thus,

Shahani et al does not disclose or suggest forming products from a cast ingot having an as-cast grain size between 300 and 800  $\mu\text{m}$ . One of ordinary skill in the art practicing the invention described by Shahani et al would therefore cast an ingot with a grain size less than 250  $\mu\text{m}$  and would not obtain the product of the invention.

Moreover, with regard to Claim 7, new Claim 19 relates to Ti being obtained by deliberate addition of grain refining elements, including both Ti and B to the alloy as cast. While Shahani et al does mention the addition of Ti among other elements to effect recrystallization, there is no disclosure in Shahani et al of adding Ti and B to the alloy.

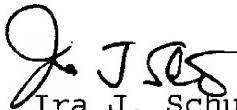
Withdrawal of this rejection is requested.

Claims 6 and 7 have been rejected under 35 USC 103 over Shahani et al, ASM Handbook in view of Shahani et al, or Miyasato et al alone or in view of JP 2000-054051. The Office action takes the position that while Shahani et al, the ASM Handbook and Miyasato et al do not teach the presently claimed ranges of Ti and B, they are within inevitable impurity limits, or alternatively, that the disclosure of JP '051 indicate that small amounts of Ti and B are beneficial to age hardenable aluminum alloys to prevent cracking.

As noted above, the claimed invention is now directed to the addition of Ti and B nucleant particles which are present during solidification of the ingots, so that these are not random impurities. The Japanese reference does disclose an aluminum-magnesium-silicon alloy which contains Ti and B. However, the alloy is an extruded shape material for a side member free from generation of cracking in the place of being applied with compressive deformation at the time of a collision, and which has an internal structure mainly fibrous. Given the specific conditions of the Japanese reference where prevention of cracking is desired, there is no reason to assume that such a composition would be effective under the conditions of Claims 6 and 7 to prevent cracking, especially in the preparation of a material which is not taught as having fibrous internal structure. Accordingly, Applicant submits that one of ordinary skill in the art would not combine the Japanese reference with the primary references cited, and withdrawal of this rejection is requested.

In view of the foregoing amendments and remarks,  
Applicant submits that the present application is now in  
condition for allowance. An early allowance of the  
application with amended claims is earnestly solicited.

Respectfully submitted,



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